ence on the Babylonian versions. He then turns to Africa and shows how not only the ancient Egyptians but also various modern races in that continent possess traditions of a similar character. In subsequent sections he continues his survey of beliefs for which evidence has been forthcoming in Australia, Melanesia and Polynesia, the Malay States, the peoples of Central and East Asia, North and South America, and the Indo-Germanic races. And he points out the remarkable recurrence of the story or myth of a sudden and destructive deluge. This nearly universal tradition he would not explain as a single original legend which has spread over the whole world, any more than he would trace it to an actual flood or deluge. The explanation he puts forward is that the deluge story in its numerous variations is a mythological presentment of celestial phenomena, reflecting the clouding over of the bright heavens by heavy rain-clouds, the differing details of the various forms of the legend being projected in accordance with the universal laws of anthropomorphic symbolism. It is the fashion at present in Germany to explain most mythologies by an astral system of interpretation, and Prof. Gerland's conclusions will be welcomed by adherents of the astral school. The weakness of all such theories is that the astrological myth is a product, not of primitive races, but of peoples that have attained a comparatively cultured and reflective stage of thought; and to explain a primitive myth by astrological theory is really to put the cart before the horse. But Prof. Gerland states his case in a remarkably able and persuasive manner, and the book embodies a valuable survey over an extremely wide range of study. L. W. K.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Effects of Friction in a Vacuum on Thorium Oxide.

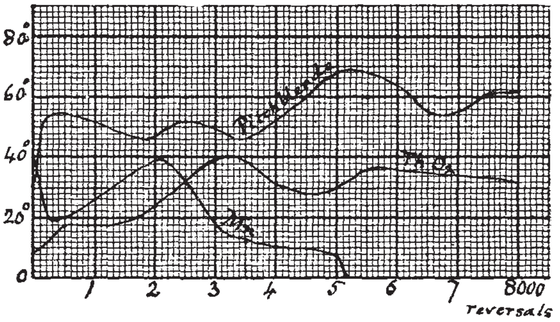
FOR two years past I have been experimenting on the action of sand, powdered beryl, and other substances within vacuum tubes of soft, fairly conducting soda glass, and I have obtained interesting results respecting the outflow of electrons when the tubes are insulated by sulphur blocks and worked on a rocker. The electrodes and a belt of tinfoil on the outside are connected by thin wires to three electroscopes with graduated scales, and the potentials at various stages of the experiments are found to fall gradually, in the case of sand, from a height symbolised by readings of 60° or more down to zero after some thousands of rockings, and this without any visible effect on the glass. The electrons are swept away and the tubes become absolutely dead. The passage of a current from an induction coil through them accelerates the sweeping process, and rest, even for a year, does not revive their action.

The case is essentially different from that of mercury in quartz. The nature of the glass renders each tube a form of closed conductor. It contains no insulated charge, but develops electricity within itself, shows flashes in the dark, and maintains an outflow for many hours.

Recently, however, I have tried the substitution of pitchblende, thorium oxide, black oxide of uranium, and other metallic oxides for sand, testing signs, recording results, and earthing the electroscopes at the end of each 100 reversals.

As the total amount of activity is a principal point, I have added together, for the purposes of the curves, the readings of the two electrodes irrespective of sign; but I deal with signs in noting the behaviour of the substances. As control experiments, I made fresh tubes (like the others, 47 cm. long and 1·2 cm. internal diameter) containing barium peroxide and manganese dioxide. The former, after momentary action, ceased to show any effect whatever; the latter, acting very much like sand, reached a maximum of 40° (one electrode giving +28°, the other −12°), and then, falling away rather sharply, became absolutely dead after 5200 reversals. The uranium oxide (U_3O_8) acted very feebly, only reaching a maximum of +7°; but it continued during 3000 reversals to indicate that the inside of the tube was positively charged.

The thorium behaved very remarkably. Rising during the first 100 rockings only to +10°, the readings grew gradually higher. During the first 2500 reversals one electrode had shown a minute negative charge, the other a fast-growing positive charge; but at that point the whole interior became positive, and so remained, the readings going up to +40°. The curve, drawn from readings taken on cessation of rocking, does not convey a due impression of the vigour of the action, or of its promise to continue unabated for an indefinite time; but we see in it a rise from inertness to strong electrification, and while we must, perhaps, look for a substratum of glass action, we know from sand and manganese and from barium peroxide that this either weakens and ceases altogether or does not occur at all. The thorium oxide is, of course, far from being a simple combination of thorium and oxygen Radio-thorium, thorium X, and an emanation would alone complicate its action, and the constant movement in the tube would diminish the suppression of the positively charged α particles by the upper layers of the oxide, but the total of these effects is small. The sum of the radio-active powers of the thorium when at rest is so very limited that it is hard for one who has witnessed its vigorous action in a tube, and the strong positive charge developed, to keep from believing that friction in a vacuum has done that which no chemical process can effect.



This impression of a mechanically-produced increase of radio-activity was much strengthened by the behaviour of pitchblende in very fine powder. From the first moment the action was vigorous, and after a few hundred rockings the whole interior of the tube became negative and so remained. The readings rose quickly to a level much above the thorium figures, and then, after about 4000 reversals, made a yet greater upward start, which was maintained with an

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obvious promise of continuance, until I was compelled to stop work. This curve also gives a poor impression of the great strength of the action. The β-rays seem to have had the upper hand in the case of pitchblende, just as the α particles had in that of thorium.

As an amateur I do not feel able to take the matter beyond this point. Accurate laboratory methods with the help of qualified assistants might give important results. RICHARD HOWLETT.

Park House, Walton-on-Thames, August 1.

Aged Sea Anemones.

In 1904 Dr. J. R. Ashworth and I published in the Proceedings of the Royal Society of Edinburgh (vol. xxv., p. 1) observations on aged individuals of *Sagartia troglodytes* then and still in the possession of Miss Jessie Nelson in Edinburgh. After eight years these anemones are still in excellent health, having been in captivity for considerably more than half a century. In one respect I fear that we did them an injustice, namely in attributing cannibalism to them, the error being probably due to the observation of the birth of young from a parent the tentacles of which were not fully expanded. Recently I chanced to notice a young Sagartia attached to a small piece of seaweed floating free in the aquarium. A slight agitation of the water was sufficient to bring the young anemone in contact with the tentacles of one of the patriarchs of its own species. They immediately closed round it and a small part of the disk became emarginate. The greater part, however, was not sensibly affected, and the mouth remained closed. In less than two minutes the folded-in tentacles uncurled and the young anemone was thrust away with some force. It then came in contact with the tentacles of a second old Sagartia, and exactly the same thing occurred. Neither the young one nor the tentacles that had held it were apparently affected in any way. Immediately after the first old Sagartia had released the young one, I dropped on its tentacles, in the region which had temporarily been affected by contact with the latter, the body of a small isopod. The isopod was seized in exactly the same manner that the young anemone had been seized, but the movements soon spread to other tentacles, the mouth gaped open, and the isopod was swallowed. In other individuals of the same species I have noticed that small masses of food, such as this little isopod, remain apparently unobserved if dropped gently on to the disk within the tentacles without touching them, but that if the tentacles are then touched and in the movements that ensue come in contact with the food lying neglected on the disk, its presence is apparently realised and it is swallowed. N. ANNANDALE.

1 Marchhall Crescent, Edinburgh, July 30.

On the Nature of Stromatoporoids.

In a letter to NATURE (July 18, p. 502) I stated that the Palæozoic Monticuliporas were siliceous sponges with a supplementary calcareous skeleton.

An examination of the Stromatoporoids—classed in the standard text-books (Zittel, Geikie, Steinmann) under Hydrozoa and Polyzoa—has led me to the conclusion that these fossils also are siliceous sponges. For I have found, both in the Hydractinioid and Milleporoid groups of Stromatoporoids, siliceous spicules of a kind related to, but not identical with, those of Merlia and Monticulipora. Frequently it is difficult to find the spicules, and it is not surprising that they have hitherto escaped observation. They are mostly microscleres of the sigma type, and require a magnification of about 1000 diameters to see clearly. Some care is necessary not to mistake edges of flakes of calcite for spicules.

The "Caunopora" tubes, at least those which I have examined in several typical Stromatoporoids, are not corals, as generally supposed, but tubes of a Chætopod worm. The supposed tabulæ are merely an expression of the segmentation of the Annelid. In some instances the worm is fairly well preserved, and the acicula abundant.

To return to Monticulipora, I find that some typical species of Favosites, Chætetes, and Rhaphidopora are siliceous sponges with supplementary calcareous skeletons of the Monticulipora type. R. KIRKPATRICK.

British Museum (Natural History).

The Earthquake in Turkey on August 9.

The recent earthquake, reported as felt in Constantinople, and as very destructive near the Sea of Marmora, has left its mark on the photographic traces of our unifilar and bifilar magnetographs, but not on the vertical force balance; and, contrary to expectation, the disturbance is more pronounced on the unifilar than on the bifilar curve. The Milne seismograph failed to record the time of the maximum disturbance otherwise than that it occurred either between 1.44 and 1.45 or between 1.47 and 1.50 a.m. on August 9, during which intervals the oscillations of the boom overstepped the recording limits. The time as registered on the magnetograms is 1.45 a.m., and this, as the true time of greatest earth oscillation, would lead us to expect an origin nearer to us than the Sea of Marmora. W. SIDGREAVES.

Stonyhurst College Observatory, Blackburn.

A Flower Sanctuary.

I am afraid that Sir Herbert Maxwell's suggestion that the plants of Cheddar pink offered for sale had been raised from seed cannot be accepted.

The Thalictrum referred to is *Thalictrum minus*, which is still abundant in the Gorge. As regards the Welsh poppy, it is good to know that this beautiful plant has increased its range; but, if by evil chance some dealer should exterminate it at Cheddar, visitors who love to see it growing there would derive small comfort from the knowledge that it continued to flourish in many other places. I hope that the appeal to "proclaim" these Cheddar plants will not fall on deaf ears. FRANK H. PERRYCOSTE.

Higher Shute Cottage, Polperro, Cornwall,
August 10.

Striated Flints from the Chalky Boulder Clay.

For some time past I have been examining flints from the Chalky Boulder Clay of Suffolk, and have been struck by the almost entire absence of striæ upon them.

When striæ are present to any noticeable degree they are generally developed on the comparatively soft cortex of the flints, while where the stones have been broken and the hard interior exposed the scratches are not to be seen.

This appears to me to point to the conclusion that the glacial action which is held to have been the cause of the Boulder Clay and the striations on the flints could not have been of a very intense order, and therefore very different from that obtaining at some period prior to the deposition of the Suffolk Red Crag, the stones found at the base of this deposit often exhibiting the most definite and deep striæ *all over their flaked surfaces*.

Also I find in the Chalky Boulder Clay stones which show a small "island" of striated cortex left in the centre of a flaked surface, and this flaked surface is

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